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finger, are found among the rocks, close to land, during the summer." But he immediately afterwards adds that, "the small eels which ascend the Severn in such numbers in the spring, and were considered by Willoughby and Pennant as the young of the Conger, are in reality the young of freshwater eels." May we not go a step farther and ask that it may be demonstrated that those "found among rocks, close to land," are Congers, and not eels, which have not yet commenced to ascend the rivers?

The *Hyopropus Messinensis** appears, likewise, to be merely the larval form of the Congroid *Nettastoma melanura*.† The resemblance between those two forms will be readily appreciated, by reference to Dr. Kaup's figures of the two. Perhaps the affinities of those Leptocephali with an expanded caudal, are to be sought for elsewhere. As to *Esunculus costai*, it resembles the young of a Clupeoid, but the high insertion of the pectoral fins, if existent in nature, forbids for the present its positive identification with such. *Stomiasunculus* resembles, in general features, a less advanced larval Clupeoid, about three days old,‡ in which the ventral fins have not yet appeared. Suspicion, however, may be entertained that it may, perhaps, be the young of some other type, (possibly Stomiadoids) on account of the backward position of the dorsal fin. I have myself, in company with a friend, seen the young of Clupeoids, which would have either been referred to *Esunculus*, or considered as the type of a closely allied new one, on account of the inferior insertion of the pectoral fins, and so transparent were they, that their eyes alone indicated their position in the water. Although entertaining no doubts concerning the larval nature of *Esunculus* and *Stomiasunculus*, I only venture to suggest the possible relations with much reserve. As to *Porobronchus*, Kaup.,§ it is, perhaps, related to *Fierasfer*, but the character of the first elongated dorsal ray requires to be known, before a decision can be arrived at.

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Note on the family of STICHÆOIDS.

BY THEODORE GILL.

There have been referred to the family of Blennioids a number of more or less elongated fishes, somewhat recalling to mind the *Gunnella*, but with the body more tapering backwards and covered with scales; the head comparatively elongated and produced towards the snout; the skull depressed behind the eyes; the branchial apertures produced forwards; the dorsal fin composed of spines; and the stomach cæcal, and also distinguished by the development of cæca around the pylorus. This combination of characters seems to indicate the necessity of the separation of the fishes so distinguished from the family of Blennioids, one of the principal characters assigned to which, by authors of even the most recent date, has been the want of cæca. The named genera known are *Leptoblennius* Gill, *Lumpenus* Reinh., *Leptoclinus* Gill, *Stichæus* Reinh., and *Chirolophis* Sw. (*Carelophus* Kr. = *Blenniops* Nilss.) For this assemblage the name Stichæoidæ may be appropriated.

Nearly related to this family is that of Cryptacanthoidæ, proposed in the "Catalogue of the Fishes of the Eastern Coast." As there is, however, considerable difference in the form and development of the head, and the ventrals are likewise obsolete, it would scarcely be advisable to combine them and the Stichæoidæ in one family. There are five pyloric appendages in *Cryptacanthodes*. The genus has none of the peculiar characters of the

* Kolliker Verh d. Phys. Med. Gesellsch in Würzburg; iv., p. 101.

† Raf. Caratteri, &c., 1810, p. 66, tav. 16, f. 1.

‡ See Sundeval "Om Fiskyngels Utveckling" in Kongl. Vet. Akad. Handl. i., 1855, tab. iv., fig. 6.

§ Kaup. An. Mag. N. H. (3) vi., 1860, p. 272.

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Cataphracti, nor has it any resemblance to any genus of that group. It evidently is closely related to the Blennioids, and has even been referred to that family by Dr. Günther, who was unacquainted with its anatomy.

Also allied to the Stichæoids is the genus *Cebedichthys*, a herbivorous fish with a very long intestinal canal, and well developed cæca, inhabiting the Pacific waters of the United States. The structure of the dorsal fin, the want of ventral fins, and the form of the head, for the present detain us from referring it to the family.

Such are, in brief, the characters and relations of the family of Stichæoids. It is now proposed to submit a corrected list of the species found in the north-eastern American seas, and to give the distinguishing characters by which the various genera may be recognized.

Synopsis.

- I. Body much elongated. Lateral line obsolete. D. 59—80.
 - α. Pectoral fins ovate, regularly convex behind.
 - * Teeth on the jaws alone.
 - † V. I. 4. Body robust. D. 60—65 (63); A. I. 42; anterior dorsal rays graduated and united.. Centroblennius.
 - †† V. I. 3 (—2) Body extremely elongated. D. 69—80; A. 48—55; Anterior dorsal short and nearly free..... Leptoblennius.
 - ** Teeth on the jaws and vomer.
 - † B. 7. Anal nearly uniform. Caudal acute.... Lumpenus.
 - †† B. 6. Anal at its anterior half depressed. Caudal rounded..... Anisarchus.
 - β. Pectoral fins with the upper rays abbreviated. Caudal subtruncated.
 - *** Teeth on the jaws, vomer and palatines..... Leptoclinus.
- II. Body moderately elongated. Lateral line more or less developed.
 - * Lateral line single, superior..... Stichæus.
 - ** Lateral line with superior and median branches united in front, the median longest..... Eumesogrammus.

CENTROBLENNIUS Gill.

CENTROBLENNIUS NUBILUS Gill.

Lumpenus nubilus Rich., Last Arctic Voyages, p. 359, pl. 28. *Gthr.* iv., 564.

Centroblennius nubilus Gill, Cat. 45.

D. 63. A. I. 42. C. 17. P. 16. V. I. 4.

Hab.—Wellington Sound.

LEPTOBLENNIUS Gill.

LEPTOBLENNIUS SERPENTINUS Gill ex St.

Blennius serpentinus Storer, Proc. Boston iii. 30; Mems. Am. Ac.

Leptoblennius serpentinus Gill, Proc. Phila. Cat. 44.

Hab.—Massachusetts, Maine.

This species, originally founded on a specimen in which a couple of the middle dorsal rays were broken, and the scales rubbed off, was referred to *Blennius*, from which I subsequently separated it, as it evidently did not belong to that genus. A specimen obtained by Dr. Stimpson, off the coast of Maine, appears to be identical with Dr. Storer's species, notwithstanding the disparity in the number of rays. It has enabled me to recognize its true affinities with the *Lumpenus gracilis* of Reinhardt, near which I had long suspected that it belongs. The Maine specimen is colored like the Massachusetts one, and has a caudal like *L. gracilis*, and only seventy-six dorsal spines, fifty-five anal rays, the first of which is nearly under the twenty-fifth of the

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dorsal, and in the ventrals there are *three* articulated and one spinous rays. Storer's specimen is said to have, and is figured with eighty-seven dorsal rays; there are sixty-six anal and two ventral. I cannot but suspect, however, that on account of the poor condition of the specimen, some misapprehension may have resulted.

LEPTOBLENNIUS GRACILIS Gill ex St.

Blennius gracilis Stuvitz.

Clinus gracilis Reinhardt, Vid. Selsk. Nat. og Math. Afh. vii., 194.

Lumpenus gracilis Reinhardt. Kr. Nat. Tid. (3) i., 282.

Lumpenus nebulosus pt. Nilsson, Skand. Fauna iv., 195.

Centroblennius nebulosus Gill, Cat. 45.

On the authority of Prof. Nilsson, this species was presented in the Catalogue of the Fishes of the Eastern Coast under the name of Fries, but according to Kroyer it is distinct.

LUMPENUS Reinhardt.

LUMPENUS FABRICII Reinhardt.

Blennius lumpenus Fab., Fauna Gr. sp. 109.

Clinus lumpenus Reinh., Vid. Selsk. Nat. og Math. Afh. vii., 114.

Lumpenus Fabricii Reinh., Vid. Selsk. Forh. 1832—5, p. cx.

Gunnellus Fabricii Storer, Syn. 121.

Hab.—Greenland.

ANISARCHUS Gill.

ANISARCHUS MEDIUS Gill ex R.

Clinus medius Reinh., Vid. S. N. og. M. Afh. vii., 114, 121, 194.

Lumpenus medius Reinh., Vid. Selsk., Fohr. 1835—6, p. cx.

Hab.—Greenland.

LEPTOCLINUS Gill.

Otenodon Nilsson (not Swainson.)

LEPTOCLINUS ACULEATUS Gill ex R.

Clinus aculeatus Reinh., Vid. S. N. og. M. Afh. vii., 114, 122.

Lumpenus aculeatus Reinh.

Leptoclinus maculatus Gill, Cat. 45.

Lumpenus maculatus Nilsson, Sk. F. iv., 190.

Hab.—Greenland.

In this case, also, Nilsson was my guide in the identification with *Lumpenus maculatus*, but, as shown by Kroyer, such is undoubtedly erroneous.

STICHÆUS Reinhardt.

STICHÆUS PUNCTATUS Reinh. ex. Fab.

Blennius punctatus Fab., F. G. No. 110.

Clinus punctatus Reinh., Vid. S. N. og. M. Afh. vii., 114.

Stichæus punctatus Reinh., Vid. Selsk. Fohr. 1832—1836, p. cx.

Hab.—Greenland.

EUMESOGRAMMUS Gill.

EUMESOGRAMMUS PRÆCISUS Gill ex Kr.

Clinus præcisus Kroyer, Nat. Tid. i., 25, Aug. 1836, (fide Kr.)

Clinus unimaculatus Reinh., Vid. S. N. og. M. Afh. vii., 114, 121, Feb. 1837, (fide Kr.)

Stichæus præcisus Kroyer, Nat. Tid. i., 372; Voyage en Scand., &c., tab. 20, f. 1, a—f; Nat. Tid. (3) i., 295, 1862.

Hab.—Greenland.

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EUMESOGRAMMUS SUB-BIFURCATUS *Gill ex St.*

Pholis sub-bifurcatus *Storer*, Rep. 63; Syn. 118.

Stichæus sub-bifurcatus *Gill*, Cat. 45. (*Storer*, Putnam, &c.)

Hab.—Massachusetts, Maine, Nova Scotia, &c., and Newfoundland.

Especially distinguished from *E. præcisus* by the absence of the abdominal lines, and the continuance of the median lateral one to the base of the caudal fin.

Notes on SHELLS, with descriptions of new fossil Genera and Species.

BY T. A. CONRAD.

NOETIA, Gray.

N. PONDEROSA, Say, occurs abundantly in the Post-Pliocene of the Southern States, and lives on the southern coast of Florida. Specimens have lately been received from Pensacola, and are in the cabinet of the Academy. It is unknown in the Mioene, the shell I referred to as a variety being a distinct species.

TURRITELLA, Lam.

T. PRÆCINCTA. Turritid, broad at base; sides straight, a profoundly elevated, thick, angular carina revolves at the summit of each volution, gradually disappearing at the fourth whorl; carina slightly channelled above, and having a single revolving line beneath near its junction with the whorls, which have each three revolving lines, the inferior one most prominent. Length $3\frac{3}{8}$ inches; width of body whorl, independent of carina, $\frac{3}{4}$ inch.

Locality. Dallas Co. ? Alabama. Eocene.

This large species differs from *T. Mortoni* in having a larger and more abruptly elevated carina, larger and fewer revolving striae, &c. It is allied to *T. rotifera*, Lam. The specimen described was loaned for the purpose by Mr. R. P. Whitfield. Other specimens are in Barnum's Museum, N. Y.

PROTocardia, Beyrich.

P. VIRGINIANA. Cordate, subtriangular, inequilateral, ventricose, thin; radiating lines minute; anterior upper margin very oblique, slightly emarginate, posterior side slightly produced, the margin obliquely truncated; post-umbonal area densely tuberculated on closely arranged striae; posterior cardinal tooth small, tubercular. Height $1\frac{1}{2}$ inch; length 1 2-5ths inch.

Locality. Pamunkey River, Virginia. Mr. Ruffin.

This species is smaller and proportionally longer than *P. Nicolleti*, with a smaller umbo, &c. This is the third Eocene species of *Protocardia* found in the United States. There are two species in the American Cretaceous rocks. The genus did not survive the Eocene fauna.

ECPHORA 4-COSTATA, Say.

Lister's figure 1059, fig. 2, represents a rare variety of this species, without umbilicus. I found one such specimen. Dillwyn erroneously refers Lister's figure to a variety of *Buccinum scala*. The shell is very peculiar in substance, resembling horn. The umbilicus, though generally enormously large, is sometimes moderate. The range of this species is from New Jersey to South Carolina, inclusive.

FASCIOLARIA, Lam.

F. SUBTENTA. Fusiform; volutions 7; body whorl ventricose, penultimate subangulated, the others angular below the middle, tuberculato-costate; surface rugoso-striate; lines alternate on the spire, irregular on the body whorl, many of them thick and prominent; minute, rugose, longitudinal lines ornament the whorls; outer lip ribbed within, the ribs divided towards the

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